

## **REMARKS**

Applicant gratefully acknowledges the courtesy of a telephonic interview granted to applicant's representative, James Heintz, by Examiner Kianni on July 5, 2006. At the interview, Applicant noted that the passages of Cielo cited in the office action, col. 5, lines 1-13, did not disclose measuring amplitudes of backward-propagating reflection peaks at a plurality of times, each of the times corresponding to a location of one of the plurality of optical sensors as required by the currently pending claims. Ex. Kianni admitted that the cited passage did not disclose this feature, and instead cited all of column 5 and lines 1-26 of column 6. When applicant's representative pointed out that the newly-cited passages also did not appear to disclose the above-referenced limitation, Ex. Kianni then stated that the rejection was based on inherency on the theory, as understood by applicant's representative, that one inherently measures amplitude at a plurality of times corresponding to the location of sensors in practicing Cielo's invention.

Claims 1-24, 34-35 and 37-38 have been canceled. Applicant reserves the right to pursue the subject matter of the canceled claims in this or any other application. Claims 25-33, 36, and 39-41 remain pending in the application. Claims 32-33, 36 and 39 have been withdrawn from consideration by the examiner. Applicant respectfully restates his position that claims 40 and 41 are linking claims that, if allowed, prevent restriction of claims 32-33, 36 and 39 from the present application and claims 32-33, 36 and 39 must be rejoined upon allowance of claims 40 and 41 pursuant to MPEP § 809.

Claims 25, 40 and 41 stand rejected under 35 U.S.C. § 103 as being obvious over U.S. Patent No. 4,400,056 ("Cielo"). This rejection is traversed. Each of claims 25, 40 and 41 includes the steps of "forming a mask over an optical fiber . . . the mask having a single opening" and "exposing each of the openings to light such that a refractive index of a

corresponding portion of the optical fiber is changed to form a Fabry-Perot cavity.” These steps are neither taught nor suggested by Cielo.

Cielo does not disclose changing the refractive index of a fiber by exposing the fiber to light. In contrast, Cielo only discusses ion bombardment at col. 3, lines 49-52.

Accordingly, claims 25, 40 and 41 are distinguishable from Cielo on this basis alone.

Moreover, Cielo does not disclose or suggest forming Fabry-Perot cavities as recited in claims 25, 40 and 41. Cielo discusses fiber Bragg gratings, which are fundamentally different from the recited Fabry-Perot cavities. One simple but important difference between the two is that Fabry-Perot cavities are not wavelength dependent whereas fiber Bragg gratings are wavelength dependent. The fiber Bragg grating operates on the principle of periodic (or quasi-periodic) reflections that enforce each other. Because the reflections are quasi-periodical, the fiber Bragg grating is necessarily wavelength dependent. Indeed, it is the wavelength dependency of the fiber Bragg gratings that allows for the wavelength multiplexing discussed at col. 6, lines 13-26. In contrast, a single Fabry-Perot cavity has no reinforcing reflections. This fundamental difference between Fabry-Perot cavities and fiber Bragg gratings represents a difference in the principle of operation of the invention of claims 25, 40 and 41 and the Cielo reference. Thus, modifying Cielo by using a mask with a single opening to form a Fabry-Perot cavity rather than a plurality of quasi-periodical openings to form a fiber Bragg grating represents a change in the principle of operation of Cielo. A proposed modification that would change the principle of operation of a reference does not constitute a prima facie showing of obviousness. MPEP § 2143.02(VI).

Applicant notes that the office action states at page 4 that using a mask with a single opening rather than a plurality of openings would have no adverse effect. Applicant respectfully disagrees. If Cielo were modified to use masks with single openings, the reflections from the cavities would not be wavelength dependent and the wavelength

multiplexing discussed in Cielo starting at col. 6, line 14 would not be possible. Thus, the proposed modification would have an adverse effect. Moreover, the office action relies on the fact that other embodiments described in applicants invention use fiber Bragg gratings. This reasoning is nothing more than an argument that Cielo *could* be modified as recited in claims 25, 40 and 41. However, the mere fact that a reference *could* be modified in the manner suggested by the office action is not sufficient to establish a prima facie case of obviousness. MPEP § 2143.01(III). What is entirely lacking in the office action is any showing of motivation for making the proposed modifications to Cielo, and there is no prima facie showing of obviousness without such a showing of motivation. MPEP § 2142. Accordingly, withdrawal of the rejections of claims 25, 40 and 41 is respectfully requested for these reasons as well.

Claims 40 and 41 include still other limitations that are patentably distinct from Cielo. These claims each require launching an optical pulse into the fiber, with “the pulse having a duration less than a time required to travel a smallest distance between the two most closely spaced Fabry-Perot cavities.” This limitation is neither taught nor suggested by Cielo.

As admitted in the office action, Cielo does not disclose a pulse of any kind. Instead, the office action states that using a pulse with Cielo’s device would be obvious because 1) pulses were well known, and 2) “since such pattern of depth(s)/width(s) would provide tunable distribution feedback reflector made in a length of fiber.” Office action at 4. Reason number 1 does not support a prima facie case of obviousness for two reasons. First, as discussed above, there has been no showing of motivation, and the mere fact that a change could be made is not motivation for making the change. Second, even if a pulse were to be used with Cielo’s invention, there is still nothing to suggest that such a pulse be smaller than the distance between sensors as required by claims 40 and 41. The second reason stated in the office action is simply not understood by applicant. Use of a pulse does not have

anything to do with whether a reflector is tunable. Applicant respectfully requests clarification of this reasoning if this basis of rejection is relied on in the future. Accordingly, withdrawal of the rejections of claims 40 and 41 for these additional reasons is respectfully requested.

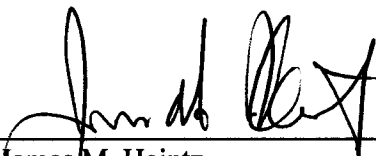
Applicant respectfully submits that all other pending claims include at least one of the limitations discussed above and therefore define patentable subject matter for at least that reason. Accordingly, withdrawal of all outstanding rejections, and rejoinder of claims 32, 33, 36 and 39, is respectfully requested.

### **CONCLUSION**

Applicant submits that the application is now in condition for examination on the merits. Early notification of such action is earnestly solicited. Should the Examiner have any suggestions to place the application in even better condition for allowance, Applicant requests that the Examiner contact the undersigned representative at the telephone number listed below.

Respectfully submitted,

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